## WHAT IS CLAIMED IS:

1	1.	An optical device comprising:				
2	a	first I/O waveguide carrying an optical signal with a plurality of				
3	wavelengths;					
4	a	second I/O waveguide carrying a first wavelength of the plurality of				
5	wavelengths;					
6	a	third I/O waveguide carrying a second wavelength of the plurality of				
7	wavelengths; and	wavelengths; and				
8	a	single-side-pass filter optically coupled to the first I/O waveguide,				
9	wherein the first	ne first single-side-pass filter reflects a first wavelength between the first I/O				
10	waveguide and the	reguide and the second I/O waveguide and the first single-side-pass filter passes a				
11	second wavelength between the first I/O waveguide and the third I/O waveguide.					
1	2.	The optical device of claim 1 further comprising:				
2		first collimator assembly comprising a GRIN lens optically coupled to the				
3	first single-side-pass filter, a first waveguide optically coupled to the first I/O waveguide,					
4	and a second waveguide optically coupled to the second I/O waveguide, wherein the first					
5	single-side-pass	single-side-pass filter reflects the first wavelength between the first I/O waveguide and the				
6	second I/O wave	guide through the second waveguide of the first collimator assembly.				
1	3.	The optical device of claim 2 further comprising:				
2	a	second collimator assembly comprising a GRIN lens optically coupled to				
3	the first single-si	de-pass filter and a first waveguide, wherein the first single-side-pass				
4	filter passes the second wavelength between the first I/O waveguide and the third I/O					
5	waveguide throu	gh the first waveguide of the second collimator assembly.				
1	4.	The optical device of claim 3 further comprising:				
2	a	third collimator assembly comprising a GRIN lens, a first waveguide				
3	optically coupled to the second waveguide of the first collimator assembly; and a second					
4	waveguide;	<i>5</i>				
5	<u> </u>	fourth collimator assembly comprising a GRIN lens and a first waveguide;				
6	and	, , ,				

7	a second single-side-pass filter optically coupled to the GRIN lens of the					
8	third collimator assembly and the GRIN lens of the fourth collimator assembly, wherein					
9	the second single-side-pass filter reflects a third wavelength of the plurality of wavelengths					
10	between the first waveguide of the third collimator assembly and the second waveguide of					
11	the third collimator assembly and passes the first frequency between the first waveguide of					
12	the third collimator assembly and the first waveguide of the fourth collimator assembly.					
1	5. The optical device of claim 4 further comprising:					
2	a fifth collimator assembly comprising a GRIN lens, a first waveguide					
3	optically coupled to the first waveguide of the second collimator assembly; and a second					
4	waveguide;					
5	a sixth collimator assembly comprising a GRIN lens and a first waveguide;					
6	and					
7	a third single-side-pass filter optically coupled to the GRIN lens of the fifth					
8	collimator assembly and the GRIN lens of the sixth collimator assembly, wherein the third					
9	single-side-pass filter reflects a fourth frequency of the plurality of optical signals between					
10	the first waveguide of the fifth collimator assembly and the second waveguide of the fifth					
11	collimator assembly and passes the second wavelength between the first waveguide of the					
12	fifth collimator assembly and the waveguide of the sixth collimator assembly.					
1	6. The optical device of claim 2 wherein the first collimator assembly					
2	and the second collimator assembly and the first single-side-pass filter are an integrated					
3	assembly.					
1	7. The optical device of claim 1 wherein the first single-side-pass filter					

- is a long-pass filter. 2
- 1 8. The optical device of claim 1 wherein the first single-side-pass filter
- 2 is a short-pass filter.
- The optical device of claim 5 wherein specified wavelengths for the 1 9. 2 first, second, and third single-side-pass filters are separated by about 25.6 nanometers.

1		10.	The optical device of claim 5 wherein a specified wavelength of the			
2	first single-sid	e-pass	filter is about 1550.02 nanometers, a specified wavelength of the			
3	second single-side-pass filter is about 1524.38 nanometers, and a specified wavelength of					
4	the third single side-pass filter is about 1575.62 nanometers.					
1		11	As autical contact including an autical desire as described in			
1	-1-! 1	11.	An optical system including an optical device as described in			
2	claim 1.					
1		12.	The optical device of claim 1 further comprising:			
2		a four	th I/O waveguide carrying a third wavelength of the plurality of			
3	wavelengths; a	and				
4		a seco	ond single-side-pass filter, wherein the second single-side-pass filter			
5	reflects the thir	hird wavelength between the first I/O waveguide and the fourth I/O waveguide				
6	and passes the	sses the second wavelength between the first I/O waveguide and the third I/O				
7	waveguide.					
1		13.	The optical device of claim 9 further comprising:			
2			I/O waveguide carrying a fourth wavelength of the plurality of			
3	wavelengths; a	ınd				
4		a seco	ond single-side-pass filter, wherein the second single-side-pass filter			
5	reflects the fourth wavelength between the first I/O waveguide and the fifth I/O waveguide					
6	and passes the second wavelength between the first I/O waveguide and the third I/O					
7	waveguide.					
1		14.	The optical device of claim 13 wherein the first, second and third			
2	single-side-pas	s filter	rs are separated by about 25.6 nanometers.			
1		15	The entired device of claim 1 forther commissions			
1		15.	The optical device of claim 1 further comprising:			
2			GRIN lens optically coupled between first I/O waveguide and the			
3	first single-side-pass filter; and					
4			nd GRIN lens optically coupled between the third I/O waveguide and			
5	the first single-side-pass filter.					

1		16.	The optical device of claim 15 further comprising a third GRIN lens				
2	optically coupled between the second I/O waveguide and the first single-side-pass filter.						
1		17.	The optical device of claim 1 further comprising a spherical				
2	dielectric lens	s optically coupled between the second I/O waveguide and the first single-					
3	side-pass filte	r.					
1 2	is curved.	18.	The optical device of claim 1 wherein the first single-side-pass filter				
1		19.	An optical device comprising:				
2		first a	nd second collimating lenses, each of the collimating lenses				
3	comprising:						
4		a dual	capillary GRIN lens with first and second waveguide terminals;				
5		an opt	ical filter coupled to the dual capillary GRIN lens;				
6		a single capillary GRIN lens coupled to the optical filter; and					
7		where	in the first waveguide terminal of the first collimating lens is optically				
8	coupled to the	first w	aveguide terminal of the second collimating lens.				
1		20.	The optical device of claim 14 further comprising::				
2		a third	collimating lens comprising:				
3		a dual	capillary GRIN lens with first and second waveguide terminals;				
4		an opt	ical filter coupled to the dual capillary GRIN lens;				
5	a single capillary GRIN lens coupled to the optical filter; and						
6		where	in the first waveguide terminal of the third collimating lens is				
7	optically coupled to the single capillary GRIN lens of the first collimating lens.						